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(54) **CONTROLLING AN ELECTRIFIED VEHICLE IN RESPONSE TO DIFFERENCES IN ENERGY CONSUMPTION RATES**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

8,121,802 B2	2/2012	Grider et al.	
8,666,576 B2	3/2014	Kim	
9,346,452 B2	5/2016	Qiu et al.	
2013/0073113 A1	3/2013	Wang et al.	
2013/0158758 A1	6/2013	Kim	
2013/0166125 A1*	6/2013	Yamamoto	B60L 7/14 701/22
2013/0311016 A1	11/2013	Kim	
2014/0142836 A1*	5/2014	Yabuta	B60W 10/06 701/123
2014/0222259 A1	8/2014	Yoshimoto et al.	
2015/0170426 A1*	6/2015	You	B60L 1/003 701/123

* cited by examiner

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(57)   **ABSTRACT**

An exemplary method of controlling an electrified vehicle includes adjusting operation of an electrified vehicle in response to a difference between a first energy consumption rate and a second energy consumption rate. The first energy consumption rate is based on energy consumption over a first duration. The second energy consumption rate is based on energy consumption over a second duration.

20 Claims, 5 Drawing Sheets